Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A vision prosthesis for implantation at a location in an eye, the vision prosthesis comprising:

an optical element having a characteristic function associated with refraction therethrough; and

a memory element that has stored therein wavefront data to control an index of refraction profile of the optical element, wherein the wavefront data is configured according to a selected [[a]] high-order aberration correction to modify the characteristic function of the optical element to reduce high-order aberration in the eye.

2. – 7. (Canceled)

8. (Original) The vision prosthesis of claim 1 further comprising:

a range-finder for generating, from a stimulus, an estimate of a distance to an object-of-regard;

an actuator in communication with the optical element for providing a signal that controls the focusing power thereof; and

a controller coupled to the rangefinder and to the actuator, for causing the actuator to generate the signal based on the estimate.

9. (Previously Presented) The vision prosthesis of claim 1 further comprising:

an actuator in communication with the optical element for providing a signal that controls the characteristic function thereof; and

a controller coupled to the actuator for causing the actuator to generate the signal based on wavefront data stored in the memory element.

10. (Original) The vision prosthesis of claim 9 wherein the signal is a parallel signal carried over a plurality of signal lines addressing a corresponding plurality of electrodes on the actuator.

11. (Original) The vision prosthesis of claim 9 wherein the characteristic function of the optical element changes in response to the signal by changing an index of refraction of material within the optical element at a plurality of locations.

12. (Canceled)

13. (Original) The vision prosthesis of claim 9 further comprising:

a range-finder coupled to the controller for generating, from a stimulus, an estimate of a distance to an object-of-regard;

wherein the signal is based on the estimate, and focusing power of the optical element changes in response to the estimate.

14. (Original) The vision prosthesis of claim 13 wherein the characteristic function of the optical element changes in response to the estimate.

15. (Original) The vision prosthesis of claim 1 wherein the location in the eye is selected from the group consisting of:

the anterior chamber;

the posterior chamber;

the lens-bag; and

the cornea.

16. (Original) The vision prosthesis of claim 1 wherein the optical element is adapted for implantation in a phakic human patient.

17. (Original) The vision prosthesis of claim 1 wherein the optical element is adapted for implantation in an aphakic human patient.

18. (Withdrawn) A method comprising:

implanting the optical element and memory element of the vision prosthesis of claim 1 into the eye;

measuring aberration in the eye when the optical element is implanted in the eye;

determining the wavefront data based on the measured aberration; and

programming the wavefront data into the memory device.

19. (Canceled)

20. (Previously Presented) The vision prosthesis of claim 1 wherein the wavefront data stored in the memory element is based on a wavefront aberration measurement performed on a patient.

21. (Previously Presented) The vision prosthesis of claim 1 wherein the high-order aberration comprises at least one of spherical aberration, coma, astigmatism, field curvature, and distortion.

22. (Previously Presented) The vision prosthesis of claim 1 wherein the index of refraction profile of the optical element is modifiable to reduce a different high-order aberration in response to different wavefront data being stored in the memory element.

23. (Currently Amended) The vision prosthesis of claim 1 wherein the high-order aberration correction provided by the wavefront data depends on an estimate of a distance to an object-of-regard.

24. – 27. (Canceled)

28. (Currently Amended) The vision prosthesis of claim 8 wherein the controller is configured to use the wavefront data to cause the actuator to provide different signals for high-order aberration correction for different estimates provided by the range-finder.

29. (Currently Amended) A vision prosthesis for implantation at a location in an eye, the vision prosthesis comprising:

an optical element having a characteristic function associated with refraction therethrough; and

means for providing wavefront data to control an index of refraction profile of the optical element, wherein the wavefront data is configured according to a selected [[a]] high-order aberration correction to modify the characteristic function of the optical element to reduce high-order aberration in the eye.

30. (New) The vision prosthesis of claim 20 wherein the wavefront data stored in the memory element is based on a first wavefront aberration measurement of anatomical features of the patient's eye while the patient is focusing on an object at a first distance and based on a second wavefront aberration measurement of the anatomical features of the eye while the patient is focusing on an object at a second distance different from the first distance.

31. (New) The vision prosthesis of claim 30 wherein the first and second wavefront aberration measurements are used to provide wavefront data that provides high-order aberration correction that depends on an estimate of a distance to an object-of-regard.

32. (New) The vision prosthesis of claim 23 wherein the dependence of the high-order aberration correction on an estimate of a distance to an object-of-regard is incorporated into the wavefront data based on predicted changes to optical path lengths in the eye that occur during accommodation.

33. (New) A vision prosthesis for implantation at a location in an eye, the vision prosthesis comprising:

an optical element having a characteristic function associated with refraction therethrough, the characteristic function being based at least in part on an optical pagh length traversed by a ray of light through the optical element;

a memory element that has stored therein wavefront data to control an index of refraction profile of the optical element, wherein the wavefront data is configured according to a selected high-order aberration correction to modify the characteristic function of the optical element, thereby reducing high-order aberration in the eye, and wherein the memory element is re-programmable

to correct, in response to first wavefront data, a first high-order aberration selected from the group consisting of spherical aberration, coma, astigmatism, field curvature, and distortion, and

to correct, in response to second wavefront data different from the first wavefront data, a different second high-order aberration selected from the group consisting of spherical aberration, coma, astigmatism, field curvature, and distortion;

an actuator in communication with the optical element for providing a signal that controls the characteristic function associated with refraction through the optical element;

a controller coupled to the actuator for causing the actuator to generate the signal that controls the characteristic function based on wavefront data stored in the memory element; and

a range-finder coupled to the controller for generating, in response to a stimulus, an estimate of a distance to an object-of-regard;

wherein the controller is configured to use the wavefront data and the estimate of the distance to the object-of-regard provided by the range-finder to determine, at each point in two-dimensional grid of points, the signal provided by the actuator to cause the actuator to provide different focusing power for different estimates provided by the range-finder and to cause the actuator to provide different signals for high-order aberration correction for different estimates of the distance to the object-of-regard provided by the range-finder.

34. (New) The vision prosthesis of claim 33 wherein the wavefront data, when configured according to a first selected high-order aberration correction, modifies the characteristic function based on a first predetermined position or orientation for the optical element within the eye.

35. (New) The vision prosthesis of claim 34 wherein the wavefront data, when configured according to a second selected high-order aberration correction, modifies the characteristic function based on a second predetermined position or orientation for the optical element within the eye.

36. (New) The vision prosthesis of claim 35 wherein the second selected high-order aberration correction includes adjustments based on postoperative deviations in the second position or orientation of the optical element from the first predetermined position or orientation.